

Transboundary Dissolved Gas Modeling Paper

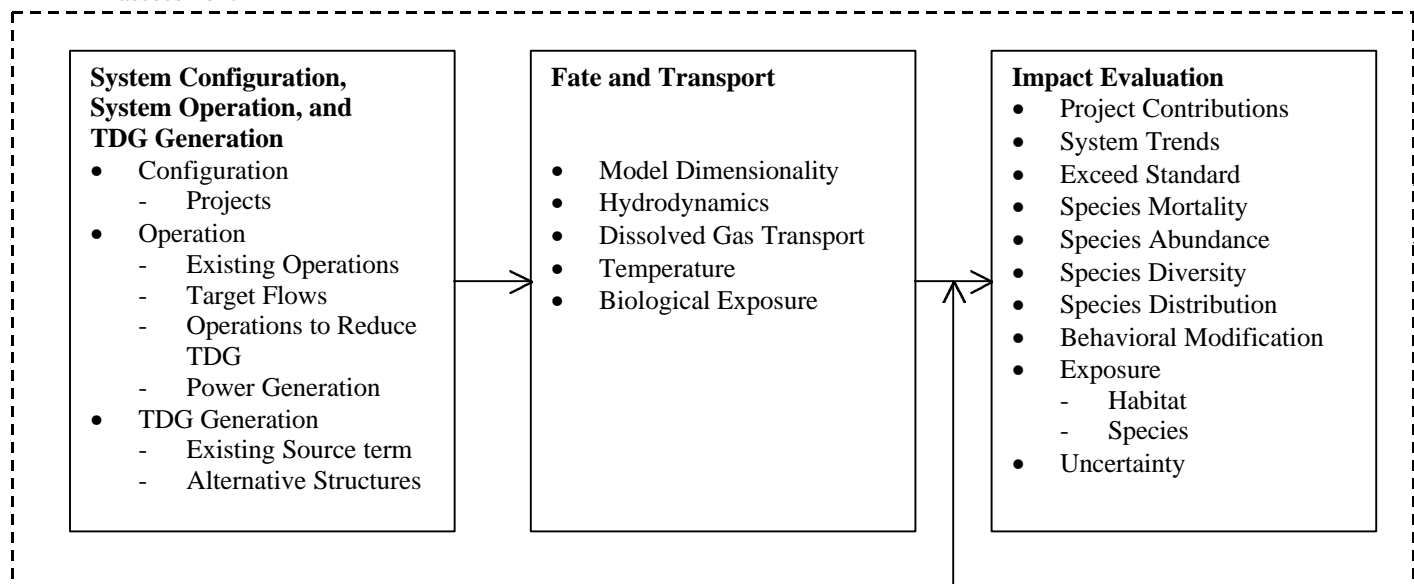
Strawman Outline

Objectives of the System Model

- Capability to perform an integrated assessment of the impacts of total dissolved gas on the Columbia Basin ecosystem
- Capability to inform decision makers on the performance of operational and structural dissolved gas abatement alternatives in order to prioritize mitigation activities
- Capability to simulate the fate and transport of dissolved gas through the Columbia Basin system
- Capability to simulate ecological exposures and habitat impacts

Elements of a Dissolved Gas Modeling Approach and Alternatives Analysis

- Geographic scales
 - Basin wide
 - Main Stems Only?
 - Key Tributaries (ie, Clearwater)
 - Output resolution (1 mile?, 1 foot?)
- Time scales
 - Seconds, hours, days
- Data requirements
 - Bathymetry
 - Hydrology
 - meteorology
 - Project operations
 - Calibration and verification
- Determine degree of model reliability needed – calibration and verification issues
 - Data needs may be reduced if higher uncertainties are allowed
- Develop dissolved gas generation relationships for each project
 - Existing
 - Abatement alternatives
- Determine Model Output Requirements
- Develop and Perform a baseline System Assessment
- Develop and Perform Gas Abatement Alternatives Assessments
- Uncertainty and Risk Analysis
- Time and Cost Estimate to develop a system gas model, perform baseline assessment, and alternatives assessment



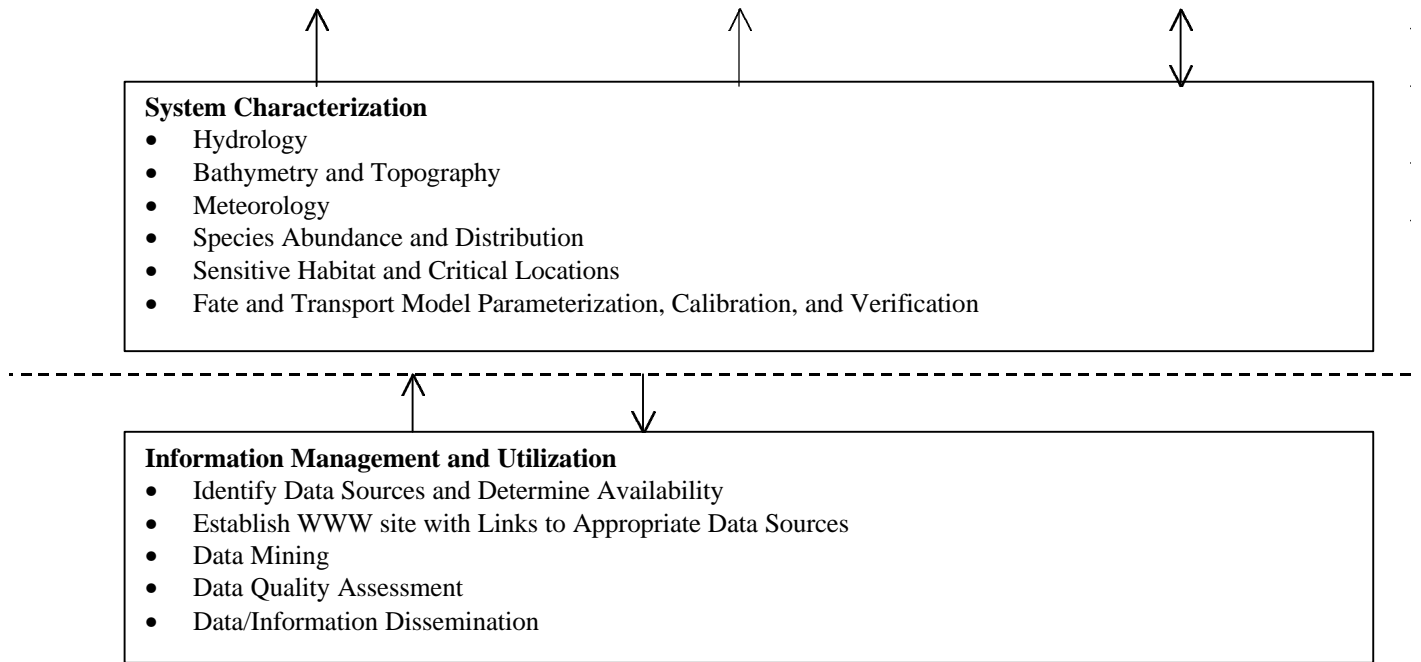


Figure 1. Conceptual Model – Columbia Basin TDG System Modeling

Discussion of Modeling Approach Items

Information Gaps

Data needed to implement modeling approach.

Research Needs

Examples: Mechanistic models of gas generation at structures, air/water gas exchange data for the Columbia,

Summary and Recommendations